ARISTOCRAT TECHNOLOGIES
AUSTRALIA PTY LIMITED
AND ARISTOCRAT TECHNOLOGIES, INC.,
PLAINTIFFS-APPELLANTS

v.

INTERNATIONAL GAME TECHNOLOGY
AND IGT,
DEFENDANTS-APPELLEES

2007-1419

United States Court of Appeals for the Federal Circuit

521 F.3d 1328

Brian E. Ferguson, McDermott, Will & Emery LLP, of Washington, DC, argued for plaintiffs-appellants. With him on the brief was Amalie M. Weber. Of counsel on the brief were Terrence P. McMahon, Anthony R. De Alcuaz, and Robert J. Blanch, of Palo Alto, California.

Jeffrey W. Sarles, Mayer Brown LLP, of Chicago, Illinois, argued for defendants-appellees. With him on the brief were Melissa A. Anyetei and Andrea C. Hutchison.

Appealed from: United States District Court for the District of Nevada

Judge Brian E. Sandoval

ARISTOCRAT TECHNOLOGIES
AUSTRALIA PTY LIMITED
AND ARISTOCRAT TECHNOLOGIES, INC.,
PLAINTIFFS-APPELLANTS,

V.

INTERNATIONAL GAME TECHNOLOGY
AND IGT,
DEFENDANTS-APPELLEES.

2007-1419

United States Court of Appeals for the Federal Circuit

Appeal from the United States District Court for the District of Nevada in case no. 05-CV-820, Judge Brian E. Sandoval.

DECIDED: March 28, 2008

Before LOURIE, SCHALL, and BRYSON, Circuit Judges

BRYSON, Circuit Judge

The appellants, referred to collectively as "Aristocrat," are the owner and exclusive licensee of U.S. Patent No. 6,093,102 ("the '102 patent"). The patent is directed to an electronic slot machine that allows a player to select

winning combinations of symbol positions. The appellees, referred to collectively as "IGT," manufacture and sell gaming products that Aristocrat asserts infringe the '102 patent. In an infringement action brought by Aristocrat against IGT in the United States District Court for the District of Nevada, the district court held all of the claims of the '102 patent invalid for indefiniteness.

The game disclosed in the '102 patent purportedly increases player interest in slot machines by providing the player with greater control over the definition of winning opportunities. It allows the player to define the winning opportunities based on symbols displayed on the top and side of a multiline screen representing slot machine reels. Using the invention on a 3x5 screen, for example, the player can define numerous different arrangements that will allow the player to win for some subset of the 243 possible winning combinations. The player can do so by selecting symbol positions and thereby activating winning opportunities for combinations in which the symbols are not necessarily aligned with one another. The only constraint is that the selected combination must contain at least one symbol from each column. Figure 2 from the '102 patent shows a 3x5 screen with selections, and the figure on the right shows one of the winning combinations for the selection in Figure 2.

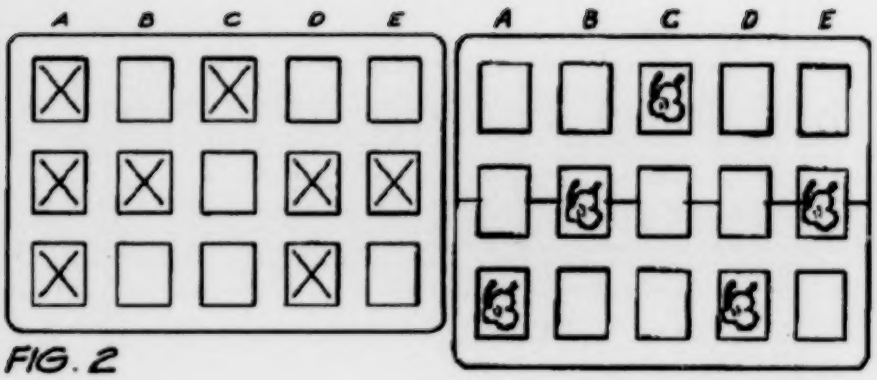


FIG. 2

A winning combination

On summary judgment, the trial court held all of the claims of the '102 patent invalid. Aristocrat does not dispute that all of the claims rise and fall together. Like the parties, we therefore focus on independent claim 1.

Claim 1 read as follows:

A gaming machine

having display means arranged to display a plurality of symbols in a display format having an array of n rows and m columns of symbol positions,

game control means arranged to control images displayed on the display means,

the game control means being arranged to pay a prize when a predetermined combination of symbols is displayed in a predetermined arrangement of symbol po-

sitions selected by a player, playing a game, including one and only one symbol position in each column of the array,

the gaming machine being characterised in that selection means are provided to enable the player to control a definition of one or more predetermined arrangements by selecting one or more of the symbol positions and

the control means defining a set of predetermined arrangements for a current game comprising each possible combination of the symbol positions selected by the player which have one and only one symbol position in each column of the display means,

wherein the number of said predetermined arrangements for any one game is a value which is the product $k_1 \ldots x \ldots k_i \ldots x \ldots k_m$ where ki is a number of symbol positions which have been selected by the player in an i^{th} column of the n rows by m columns of symbol positions on the display ($0 < i \square m$ and $k_i <_ n$).

I

The district court observed that the key question in this case is the definiteness of the claim term "game control means" or "control means" that is used several times in claim 1. The court explained

that the claim describes the "game control means" as performing three functions: (1) to control images displayed on the display means; (2) to pay a prize when a predetermined combination of symbols matches the symbol positions selected by the player; and (3) to define the pay lines for the game according to each possible combination of the selected symbol positions.

The district court noted that the parties agreed the term "control means" is a means-plus-function term that invokes 35 U.S.C. § 112 ¶ 6. As such, the scope of that claim limitation had to be defined by the structure disclosed in the specification plus any equivalents of that structure; in the absence of structure disclosed in the specification to perform those functions, the claim limitation would lack specificity, rendering the claim as a whole invalid for indefiniteness under 35 U.S.C. § 112 ¶ 2. See In re Donaldson, 16 F.3d 1189, 1195 (Fed. Cir. 1994) (en banc).

The court noted that there were slight linguistic differences in the parties' characterizations of the functions performed by the "control means," but that the differences were unimportant, because there was no adequate disclosure of structure in the specification to perform those functions, regardless of how they were defined. Although Aristocrat argued that the structure corresponding to the recited functions was a standard microprocessor-based gaming machine with "appropriate programming," the court noted that the specification contained no "guidance to determine the meaning of 'standard microprocessor' or 'appropriate programming.'" The

court ruled that "[m]erely stating that a standard microprocessor is the structure without more is not sufficient." In particular, the court noted that the specification did not create any specific structure or new machine because "it does not set forth any specific algorithm" for performing the recited function.

Citing decisions of this court, the trial court explained that in a means-plus function claim "in which the disclosed structure is a computer or a microprocessor programmed to carry out an algorithm, a corresponding structure must be a specific algorithm disclosed in the specification, rather than merely an algorithm executed by a computer.'" Because the specification of the '102 patent lacks "any specific algorithm" or any "step-by-step process for performing the claimed functions of controlling images on the slot machines [sic] video screen, paying a prize when a predetermined combination of symbols comes up or defining the pay lines for games," the court held the asserted structure to be insufficient to satisfy section 112 paragraph 6. In addition, the district court held that the specification did not link the asserted structure to any of the claimed functions. The court held claim 1 invalid for that reason as well.

II

On appeal, Aristocrat first argues that the district court erred by failing to construe the disputed term "game control means" or "control means" in claim 1. Aristocrat argues that because the district court did not construe the functions of the "control means" term under 35 U.S.C. §112 ¶ 6,

it could not have properly determined whether the specification recited adequate structure corresponding to those functions.

The district court stated that "[t]he determination as to which function description is the accurate construction is not pertinent to the summary judgment motion because the structure is lacking in description and is not found in the specification." Aristocrat argues that our decision in Oakley, Inc. v. Sunglass Hut Int'l, 316 F.3d 1331, 1340 (Fed. Cir. 2003), requires that a "determination [of definiteness] requires a construction of the claims according to the familiar canons of claim construction."

The district court committed no error in its analysis of the means-plus-function limitation in this case. The court described the two competing claim constructions proposed by the parties, and the court's description made clear that there was virtually no difference between them. Moreover, the district court, later in its opinion, effectively gave a construction of the functions of the "control means" limitation when it stated that the specification contained no algorithm that described or recited the claimed functions. Describing the claimed functions, the court wrote: "The specification contains no stepby-step process for performing the claimed functions of controlling images on the slot machine's video screen, paying a prize when a predetermined combination of symbols comes up or defining the pay lines for games." That characterization of the claimed functions of the "game control means" is not materially different from the characterization that Aristocrat argues the dis-

trict court should have adopted in analyzing the means-plus-function limitation. To the extent the court's characterization differs from Aristocrat's, it is only because the court's characterization omits some of the detail found in Aristocrat's characterization. The omission of that detail, however, has no effect on the question whether the specification discloses sufficient structure to perform the claimed functions. In fact, Aristocrat's description of the claimed function would appear to require more by way of specificity in the disclosed structure than would the court's characterization. The district court therefore committed no reversible error with respect to this issue.

III

Aristocrat's principal contention is that the district court was wrong to hold that the patent's disclosure of a general purpose, programmable microprocessor was not a sufficient disclosure of structure to satisfy section 112 paragraph 6. In particular, Aristocrat argues that computer-implemented means-plus-function claims do not require disclosure of a corresponding algorithm, as held by the district court. Instead, Aristocrat contends that the structure disclosed in the specification of the '102 patent, which was simply "any standard microprocessor base [sic] gaming machine [with] appropriate programming," was a sufficient disclosure of structure under this court's precedents.

In cases involving a computer-implemented invention in which the inventor has invoked means-plus-function claiming, this court has consis-

tently required that the structure disclosed in the specification be more than simply a general purpose computer or microprocessor. The point of the requirement that the patentee disclose particular structure in the specification and that the scope of the patent claims be limited to that structure and its equivalents is to avoid pure functional claiming. As this court explained in Medical Instrumentation & Diagnostics Corp. v. Elekta AB, 344 F.3d 1205, 1211 (Fed. Cir. 2003), "If the specification is not clear as to the structure that the patentee intends to correspond to the claimed function, then the patentee has not paid the price but is attempting to claim in functional terms unbounded by any reference to structure in the specification." See also Biomedino, LLC v. Waters Techs. Corp., 490 F.3d 946, 948 (Fed. Cir. 2007) ("[I]n return for generic claiming ability, the applicant must indicate in the specification what structure constitutes the means."). For a patentee to claim a means for performing a particular function and then to disclose only a general purpose computer as the structure designed to perform that function amounts to pure functional claiming. Because general purpose computers can be programmed to perform very different tasks in very different ways, simply disclosing a computer as the structure designated to perform a particular function does not limit the scope of the claim to "the corresponding structure, material, or acts" that perform the function, as required by section 112 paragraph 6.

That was the point made by this court in WMS Gaming, Inc. v. International Game Technology, 184 F.3d 1339 (Fed. Cir. 1999). In that case, the court criticized the district court, which had determined that the structure disclosed in the specification to perform the claimed function was "an algorithm executed by a computer." The district court erred, this court held, "by failing to limit the claim to the algorithm disclosed in the specification." Id. at 1348. The rationale for that decision is equally applicable here: a general purpose computer programmed to carry out a particular algorithm creates a "new machine" because a general purpose computer "in effect becomes a special purpose computer once it is programmed to perform particular functions pursuant to instructions from program software." Id., quoting In re Alappat, 33 F.3d 1526, 1545 (Fed. Cir. 1994). The instructions of the software program in effect "create a special purpose machine for carrying out the particular algorithm." WMS Gaming, 184 F.3d at 1348. Thus, in a means-plus-function claim "in which the disclosed structure is a computer, or microprocessor, programmed to carry out an algorithm, the disclosed structure is not the general purpose computer, but rather the special purpose computer programmed to perform the disclosed algorithm." Id. at 1349.

In a later case, this court made the same point, stating that a "computer-implemented means-plus-function term is limited to the corresponding structure disclosed in the specification and equivalents thereof, and the corresponding structure is the algorithm." Harris Corp. v. Erics-

son Inc., 417 F.3d 1241, 1253 (Fed. Cir. 2005). The court in that case characterized the rule of WMS Gaming as follows: "[T]he corresponding structure for a § 112 ¶ 6 claim for a computer-implemented function is the algorithm disclosed in the specification." 417 F.3d at 1249.

In this case, Aristocrat acknowledges that the only portion of the specification that describes the structure corresponding to the three functions performed by the "control means" is the statement that it is within the capability of a worker in the art "to introduce the methodology on any standard microprocessor base [sic] gaming machine by means of appropriate programming." '102 patent, col. 3, ll. 2-4. That description goes no farther than saying that the claimed functions are performed by a general purpose computer. The reference to "appropriate programming" imposes no limitation whatever, as any general purpose computer must be programmed. The term "appropriate programming" simply references a computer that is programmed so that it performs the function in question, which is to say that the function is performed by a computer that is capable of performing the function.

Aristocrat offers two responses to the district court's conclusion that the patent did not disclose sufficient structure. First, Aristocrat argues that the specification disclosed algorithms that were sufficient to constitute a qualifying disclosure of structure. Second, Aristocrat argues that no disclosure of specific algorithms was necessary in any event.

A

As to the first argument, Aristocrat contends that the language of claim 1 referring to "the game control means being arranged to pay a prize when a predetermined combination of symbols is displayed in a predetermined arrangement of symbol positions selected by a player" implicitly discloses an algorithm for the microprocessor. That is, when the winning combination of symbols is displayed, the program should pay a prize. But that language simply describes the function to be performed, not the algorithm by which it is performed. Aristocrat's real point is that devising an algorithm to perform that function would be within the capability of one of skill in the art, and therefore it was not necessary for the patent to designate any particular algorithm to perform the claimed function. As we have noted above, however, that argument is contrary to this court's law.

Aristocrat also points to language in claim 1 that, according to Aristocrat, "sets forth the mathematical equation that describes the result of practicing the third function." The language in question recites "defining a set of predetermined arrangements for a current game comprising each possible combination of the symbol position selected by the player which have one and only one symbol position in each column of the display means." The problem with Aristocrat's argument is underscored by Aristocrat's very characterization of the role of the equation: It describes the result of practicing the third function. That is, the equation is not an algorithm that describes how the function is performed,

but is merely a mathematical expression that describes the outcome of performing the function. To be sure, as Aristocrat argues, the equation "restricts appropriate programming' to algorithms which result in the specified number of winning opportunities." But that argument simply concedes that the equation describes an outcome, not a means for achieving that outcome. The equation thus does not disclose the structure of the claimed device, but is only another way of describing the claimed function.

Finally, Aristocrat contends that "the written description delineates what constitutes appropriate programming' through the disclosed embodiments of the invention." Again, however, the description of the embodiments is simply a description of the outcome of the claimed functions, not a description of the structure, i.e., the computer programmed to execute a particular algorithm.

In making this argument, Aristocrat relies on Figure 1 and Table 1 from the patent, which provide examples of how player selections translate to possible winning combinations:

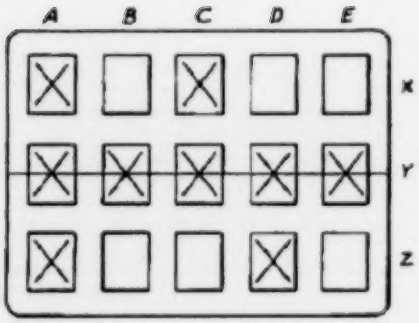


FIG. 1

TABLE 1

LINE NO	DISPLAY POSITIONS USED				
1	AX	BY	CX	DY	EY
2	AX	BY	CX	DZ	EY
3	AX	BY	CY	DY	EY
4	AX	BY	CY	DZ	EY

TABLE 1-continued

LINE NO	DISPLAY POSITIONS USED				
5	AY	BY	CX	DY	EY
6	AY	BY	CX	DZ	EY
7	AY	BY	CY	DY	EY
8	AY	BY	CY	DZ	EY
9	AZ	BY	CX	DY	EY
10	AZ	BY	CX	DZ	EY
11	AZ	BY	CY	DY	EY
12	AZ	BY	CY	DZ	EY

Two other pairs of figures and tables, Figures 3 and 4, and Tables 2 and 3, offer similar examples. The corresponding portion of the written description contains mathematical descriptions of how many winning combinations would be produced. '102 patent, col. 3, line 54, through col. 5, line 21. Aristocrat refers to these examples as "algorithms." The figures, tables, and related discussion, however, are not algorithms. They are simply examples of the results of the operation of an unspecified algorithm. Like the mathematical equation set forth in claim 1, these combinations of figures and

tables are, at best, a description of the claimed function of the means-plus-function claim.

Aristocrat has elected to claim using section 112 paragraph 6 and therefore must disclose corresponding structure. It has disclosed, at most, pictoral and mathematical ways of describing the claimed function of the game control means. That is not enough to transform the disclosure of a general-purpose microprocessor into the disclosure of sufficient structure to satisfy section 112 paragraph 6.

B

In support of the contention that it is not necessary to disclose a particular algorithm in order to disclose sufficient structure for a means-plus-function limitation in a computer-implemented invention, Aristocrat relies primarily on In re Dossel, 115 F.3d 942 (Fed. Cir. 1997). Aristocrat argues that the application in Dossel did not disclose a particular algorithm, and that the court held the disclosure sufficient even though the application stated, with respect to the performance of one of the claimed functions, that "[k]nown algorithms can be used for this purpose."

The means-plus-function limitation at issue in Dossel was a "means for reconstructing the current distribution" on the surface of an element inside a biological object, such as on the surface of a tumor inside a human brain. The application stated that the reconstruction unit would reconstruct the density of the current at various points on that surface from the values of the magnetic flux

density at corresponding pixels at the same time. See U.S. Patent No. 5,885,215, col. 4, ll. 6-10 (the patent that issued from the Dossel application). The application explained that "[k]nown algorithms can be used for this purpose." Id., col. 4, ll. 10-11. The application then provided the particular equation by which the relationship between the values of magnetic flux density and current density could be described in matrix form, id., col. 4, ll. 12-15, and it described in great detail the components of that equation, id., col. 4, ll. 16-55. Accordingly, while providing a detailed explanation of how the claimed device would perform the claimed function, the specification left the mathematical techniques used to solve the recited equations to persons of ordinary skill in the art. That is what this court referred to when it stated that the application stated "that known algorithms' can be used to solve standard equations which are known in the art." Dossel, 115 F.3d at 946.

From the context and from reviewing the application, it is clear that the Dossel court used the term "algorithm" in a narrow sense, referring to particular well-known mathematical operations that could be used to solve the equations disclosed in the application. Far from supporting Aristocrat's claim that a reference to a general purpose computer with "appropriate programming" discloses sufficient structure for section 112 paragraph 6, the Dossel case provides an example of an extremely detailed disclosure of all information necessary to perform the function, except for basic mathematical techniques that would be known to any person skilled in the pertinent art. Aristocrat also argues that, even

if there is no disclosure of an algorithm in the patent, the disclosure of a microprocessor with "appropriate programming" is a sufficient disclosure of structure for means-plus-function purposes, because the evidence showed that one of ordinary skill in the art could build the device claimed in the '102 patent based on the disclosure in the specification. That argument, however, conflates the requirement of enablement under section 112 paragraph 1 and the requirement to disclose the structure that performs the claimed function under section 112 paragraph 6.

Although the examples given in the '102 patent might enable one of ordinary skill to make and use the invention, they do not recite the particular structure that performs the function and to which the means-plus-function claim is necessarily limited.

Whether the disclosure would enable one of ordinary skill in the art to make and use the invention is not at issue here. Instead, the pertinent question in this case is whether Aristocrat's patent discloses structure that is used to perform the claimed function. Enablement of a device requires only the disclosure of sufficient information so that a person of ordinary skill in the art could make and use the device. A section 112 paragraph 6 disclosure, however, serves the very different purpose of limiting the scope of the claim to the particular structure disclosed, together with equivalents. The difference between the two is made clear by an exchange at oral argument. In response to a question from the court, Aristocrat's counsel con-

tended that, in light of the breadth of the disclosure in the specification, any microprocessor, regardless of how it was programmed, would infringe claim 1 if it performed the claimed functions recited in the means-plus-function limitations of that claim. That response reveals that Aristocrat is in essence arguing for pure functional claiming as long as the function is performed by a general purpose computer. This court's cases flatly reject that position.

For example, in Atmel Corp. v. Information Storage Devices, Inc., 198 F.3d 1374, 1380 (Fed. Cir. 1999), the court embraced the proposition that "consideration of the understanding of one skilled in the art in no way relieves the patentee of adequately disclosing sufficient structure in the specification." It is not enough for the patentee simply to state or later argue that persons of ordinary skill in the art would know what structures to use to accomplish the claimed function. The court in Biomedino, LLC v. Waters Technologies Corp., 490 F.3d 946, 953 (Fed. Cir. 2007), put the point this way: "The inquiry is whether one of skill in the art would understand the specification itself to disclose a structure, not simply whether that person would be capable of implementing that structure." Discussing Atmel, the court in Biomedino stated:

> In Atmel, it was not the fact that one skilled in the art was aware of known circuit techniques that resulted in a conclusion that sufficient structure was recited. Rather, it was the inclusion in the written description of the title of [a technical

> article] which itself described the structure for a "known circuit technique." Expert testimony was used to show what the title of the article would convey to one skilled in the art—in this case it was the "precise structure of the means recited in the specification." . . . The expert's testimony did not create or infer the structure.

490 F.3d at 952.

Aristocrat relies on a statement from the recent decision of this court in AllVoice Computing PLC v. Nuance Communs., Inc., 504 F.3d 1236, 1245 (Fed. Cir. 2007), where the court stated that in software cases "algorithms in the specification need only disclose adequate defining structure to render the bounds of the claim understandable to one of ordinary skill in the art." We similarly stated in Medical Instrumentation & Diagnostics Corp. v. Elekta AB, 344 F.3d 1205, 1214 (Fed. Cir. 2003), that "there would be no need for a disclosure of the specific program code if software were linked to the . . . function and one skilled in the art would know the kind of program to use."

It is certainly true that the sufficiency of the disclosure of algorithmic structure must be judged in light of what one of ordinary skill in the art would understand the disclosure to impart. See, e.g., Intel Corp. v. VIA Techs., 319 F.3d 1357, 1367 (Fed. Cir. 2003) (knowledge of a person of ordinary skill in the art can be used to make clear how to implement a disclosed algorithm); Atmel Corp., 198

F.3d at 1379 ("[T]he one skilled in the art' analysis should apply in determining whether sufficient structure has been disclosed to support a means-plus-function limitation."). That principle, however, has no application here, because in this case there was no algorithm at all disclosed in the specification. The question thus is not whether the algorithm that was disclosed was described with sufficient specificity, but whether an algorithm was disclosed at all.

In Medical Instrumentation, we held that the proper inquiry for purposes of section 112 paragraph 6 analysis is to "look at the disclosure of the patent and determine if one of skill in the art would have understood that disclosure to encompass software [to perform the function] and been able to implement such a program, not simply whether one of skill in the art would have been able to write such a software program." 344 F.3d at 1212 (emphasis in original). We then stated that it is "not proper to look to the knowledge of one skilled in the art apart from and unconnected to the disclosure of the patent." Id. That is precisely the inquiry the district court performed and that we reviewed above. Here, as in Medical Instrumentation, the patent does not disclose the required algorithm or algorithms, and a person of ordinary skill in the art would not recognize the patent as disclosing any algorithm at all. Accordingly, the means-plus-function limitations of claim 1 lacked sufficient disclosure of structure under 35 U.S.C. § 112 ¶ 6 and were therefore indefinite under 35 U.S.C. § 112 ¶ 2.

IV

Aristocrat was not required to produce a listing of source code or a highly detailed description of the algorithm to be used to achieve the claimed functions in order to satisfy 35 U.S.C. § 112 ¶ 6. It was required, however, to at least disclose the algorithm that transforms the general purpose microprocessor to a "special purpose computer programmed to perform the disclosed algorithm." WMS Gaming, 184 F.3d at 1349. Because the district court correctly held that was not done in this case, we uphold the judgment of the district court.

AFFIRMED.

ARISTOCRAT TECHNOLOGIES AUSTRALIA PTY LIMITED AND ARISTOCRAT TECHNOLOGIES, INC.,
PLAINTIFFS
V.
INTERNATIONAL GAME TECHNOLOGY AND IGT,
DEFENDANTS

2007-1419

United States District Court
District of Nevada

2:05-CV-00820-BES (LRL)

April 20, 2007

Currently before this Court is Defendants' Motion for Summary Judgment (#94), which was filed on June 22, 2006. Plaintiff filed a Response (#117) on July 18, 2006, and Defendants filed a Reply (#128) on August 9, 2006. On February 27, 2007, Plaintiff requested oral argument on the Motion for Summary Judgment (#179).

Additionally before the Court are the parties' *Markman* briefs concerning the construction of certain terms in the patent. (Doc. # 63) and (Doc. #66). A *Markman* hearing addressing the issues of claim interpretation was held before the Court on May 23, 2006.

I. BACKGROUND

A. The '102 Patent and its Prosecution History.

The subject of this litigation is U.S. Patent No. 6,093,102 (the "'102 patent"), entitled "MULTILINE GAMING MACHINE," which was issued by the United States Patent and Trademark Office on July 25, 2000. Aristocrat Technologies Australia Pty Limited ("ATA") is the owner, by valid assignment, of all right, title, and interest in and to the '102 patent. Aristocrat Technologies, Inc. ("ATI") is a licensee of ATA and is licensed to practice the '102 patent in a territory including the United States (ATA and ATI are collectively referred to as "Aristocrat").

In general, the '102 patent describes a slot machine that purports to increase player interest over the prior art machines by allowing the player to control the number of pay lines. Prior gaming machines that had pay lines allowed the player to purchase the option of playing for a win on multiple predefined lines. The '102 patent describes a gaming machine that allows the players to increase the number of winning opportunities because it provides an arrangement whereby the number of pay lines provided on a slot machine, particularly a machine with 3x5 display, can be increased without changing the display format. "A gaming machine has a display which displays a symbols [sic] in an array format of n rows and m columns of symbol positions. A game control controls images displayed on the display and is arranged to pay a prize when a predetermined combination of symbols is displayed in predeter-

mined arrangement of symbol positions...." Abstract; *see also* Patent, Col. 2, ll. 8-14.

The machine purports to allow a player to individually select symbol positions. At least one symbol position is selected from each column, and the number of predetermined arrangements represents the number of possible combinations of selected symbol positions which have one symbol position in each column of the display means. Abstract; *see also* Patent, Col. 2, ll. 36-40. The number of predetermined symbol arrangements for any one game can be directly or indirectly player selected by the player. Patent, Col 2., II. 30-34. The number of predetermined arrangements is the number of possible combinations of the selected symbol positions, with one symbol position in each column of the display means. Patent, Col 2., ll. 22-26.

Claim 1, the only independent claim of the 102 patent, states:

> 1. "A gaming machine having display means arranged to display a plurality of symbols in a display format having an array of n rows and m columns of symbol positions, game control means arranged to control images displayed on the display means, the game control means being arranged to pay a prize when a predetermined combination of symbols is displayed in a predetermined arrangement of symbol positions selected by a player, playing a game, including one and only one symbol position in each column of the array, the gaming machine being characterised in that selection means are provided

> to enable the player to control a definition of one or more predetermined arrangements by selecting one or more of the symbol positions and the control means defining a set of predetermined arrangements for a current game comprising each possible combination of the symbol positions selected by the player which have one and only one symbol position in each column of the display means, wherein the number of said predetermined arrangements for any one game is a value which is the product $k_1 \ldots x \ldots k \ldots x \ldots km$ where k is a number of symbol positions which have been selected by the player in an column of the n rows by m columns of symbol positions on the display....." Col. 5, ll. 63-67; Col. 6, ll.1-17.

At issue in this motion for summary judgment is the definiteness of the term "game control means" as it is used in the context of the claim 1 of the 102 patent. Both parties agree that there are three different aspects of the term "game control means" as described in the 102 patent. The 102 patent provides that "game control means" are arranged to: (1) control images on the slot machines video screen; (2) pay a prize when a predetermined combination of symbols matches the symbol positions selected by the player; and (3) define the pay lines for games according to each possible combination of those selected symbol positions. Aristocrat acknowledges that there is only one corresponding structure for all three aspects, namely the "standard microprocessor based gaming machine under program control, plus

equivalents." Plaintiffs' Opening Claim Construction Brief (#66).

IGT brought the motion for summary judgment on two grounds, that IGT is not liable for patent infringement and that the 102 patent is fatally indefinite because the specification neither identifies any structure as the game control means nor directly links any structure to the identified function.

II. DISCUSSION

When evaluating a motion for summary judgment, the court views the record evidence through the prism of the evidentiary standard of proof that would pertain at a trial on the merits. *Eli Lilly and Co. v. Barr Laboratories, Inc.*, 251 F.3d 955, 962-963 (Fed. Cir. 2001), *citing Anderson*, 477 U.S. at 252-53. Under the patent statutes, a patent enjoys a presumption of validity, which can be overcome only through clear and convincing evidence. *See*, 35 U.S.C. § 282; *United States Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1563 (Fed.Cir.1997). Thus, a moving party seeking to invalidate a patent at summary judgment must submit such clear and convincing evidence of invalidity so that no reasonable jury could find otherwise. *Eli Lilly*, 251 F.3d at 962-963. In determining whether a genuine issue of material fact exists, the court views the evidence in the light most favorable to the nonmoving party and resolves all doubts in its favor. *Id.* Whether a claim is invalid for indefiniteness pursuant to 35 U.S.C. § 112, ¶ 2, is a question of law. *Id.* (citing *N. Am. Vaccine, Inc. v. Am. Cyanamid Co.*, 7 F.3d 1571, 1579, (Fed.Cir.1993)).

A. Law of Indefiniteness.

Every patent's specification must conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention. 35 U.S.C. § 112, ¶ 2. Because the claims perform the fundamental function of delineating the scope of the invention, the purpose of the definiteness requirement is to ensure that the claims delineate the scope of the invention using language that adequately notifies the public of the patentee's right to exclude. *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1347 (Fed.Cir. 2005); *Chimie v. PPG Indus., Inc.*, 402 F.3d 1371, 1379 (Fed.Cir.2005), *Honeywell Int'l, Inc. v. Int'l Trade Comm'n*, 341 F.3d 1332, 1338 (Fed.Cir.2003). According to the Supreme Court, "[t]he statutory requirement of particularity and distinctness in claims is met only when [the claims] clearly distinguish what is claimed from what went before in the art and clearly circumscribe what is foreclosed from future enterprise." *United Carbon Co. v. Binney & Smith Co.*, 317 U.S. 228, 236, 63 S.Ct. 165, 87 L.Ed. 232 (1942).

In the face of an allegation of indefiniteness, general principles of claim construction apply. *See Oakley, Inc. v. Sunglass Hut Int'l*, 316 F.3d 1331, 1340-41 (Fed.Cir.2003) (noting that a determination of definiteness "requires a construction of the claims according to the familiar canons of claim construction"). Intrinsic evidence in the form of the patent specification and file history should guide a court toward an acceptable claim construction. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed.Cir.2005) (en

banc). Intrinsic evidence of record is comprised of the claims themselves, the patent specification (also known as the written description), and the prosecution history of the patent. *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed.Cir.1996). Claims should be interpreted consistently with the specification, which explains the nature of the patentee's invention. *Renishaw PLC v. Marposs Societa per Azioni*, 158 F.3d 1243, 1250 (Fed.Cir.1998).

If the proper interpretation of the claim is not clear from the intrinsic record, the court may rely on extrinsic evidence such as expert testimony, inventor testimony, technical treatises, or articles. *Vitronics Corp.*, 90 F.3d at 1584. Such extrinsic evidence "may be used only to help the court come to the proper understanding of the claims; it may not be used to vary or contradict the claim language...." *Id.* Otherwise its use should be limited to situations where the analysis of the intrinsic record leaves the claims unclear. *See Spectrum Int l, Inc. v. Sterilite Corp.*, 164 F.3d 1372, 1378 (Fed.Cir.1998).

B. Means-Plus-Function Claim.

The parties do not dispute that the term "game control means" is a means-plus function term. Use of a means-plus-function limitation generally invokes § 112, ¶ 6. *Greenberg v. Ethicon Endo-Surgery, Inc.*, 91 F.3d 1580, 1584 (1996). Means-plus-function limitations are defined in 35 U.S.C. § 112, ¶ 6:

> An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support

> thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

35 U.S.C. § 112, ¶ 6 (2000).

There are two steps in construing a means-plus-function: first, the function must be determined; then, the corresponding structure as described in the specification must be identified. *Medtronic, Inc., v. Advanced Cardiovascular Sys., Inc.*, 248 F.3d 1303, 1311 (Fed.Cir.2001); *Micro Chem., Inc. v. Great Plains Chem. Co.*, 194 F.3d 1250, 1258 (Fed.Cir.1999); *WMS Gaming, Inc. v. International Game Tech.*, 184 F.3d 1339, 1347 (Fed.Cir.1999). A structure in the specification is a corresponding structure if "the specification or prosecution history clearly links or associates that structure to the function recited in the claim." *WMS Gaming*, 184 F.3d at 1347; *Braun Med. v. Abbott Labs.*, 124 F.3d 1419, 1424 (Fed.Cir.1997). This does not mean that the corresponding structure must include all things necessary for the claimed invention to work, but "it must include all structure that actually performs the recited function." *Default Proof Credit Card System, Inc. v. Home Depot U.S.A., Inc. (d/b/a The Home Depot)*, 412 F.3d 1291, 1298 (Fed. Cir. 2005), citing *In re Donaldson Co.*, 16 F.3d 1189, 1195 (Fed.Cir.1994) (en banc); *Cardiac Pacemakers, Inc. v. St. Jude Med., Inc.*, 296 F.3d 1106, 1119 (Fed.Cir.2002); *DE Technologies, Inc. v. Dell, Inc.*, 428 F.Supp.2d 512, 517 (W.D. Va 2006).

If no corresponding structure is disclosed, the scope of the claim cannot be defined and the claim is

indefinite. *Default Proof*, 412 F.3d at 1298. In order for a corresponding structure to be adequately disclosed for a means-plus-function limitation, the structure must be found in the patent specification. *De Tech*, 428 F. Supp. at 517. "[I]f one employs means-plus-function language in a claim, one must set forth in the specification an adequate disclosure showing what is meant by that language. If an applicant fails to set forth an adequate disclosure, the applicant has in effect failed to particularly point out and distinctly claim the invention as required by the second paragraph of section 112." *Default Proof*, 412 F.3d at 1298. This disclosure can be supported by expert testimony, and the specification is interpreted as read by one of skill in the art. *De Tech*, 428 F. Supp. at 517-518. However, expert testimony standing alone is not sufficient to disclose a corresponding structure, however, and whether an expert could build a corresponding structure is irrelevant. *De Tech*, 428 F.Supp. at 518.

IGT claims that the "game control means" performs the following three functions: (1) control images displayed on the display means; (2) pay a prize when a predetermined combination of symbols is displayed in a predetermined arrangements of symbols positions selected by a player playing a game, including one and only one symbol position in each column of the array; and (3) defining a set of predetermined arrangements for a current game comprising each possible combination of the symbol positions selected by the player which have one and only one symbol position in each column of the display means. Motion for Summary Judgment (#94) at 5. Aristocrat argues that the "game control means"

functions are: (1) control images on the slot machines video screen; (2) pay a prize when a predetermined combination of symbols matches the symbol positions selected by the player; and (3) define the pay lines for games according to each possible combination of those selected symbol positions. Aristocrat's Opening Claim Brief (#66) at 16.

The determination as to which function description is the accurate construction is not pertinent to the summary judgment motion because the structure is lacking in description and is not found in the specification. In order to qualify as corresponding, the structure must not only perform the claimed function, but the specification must clearly associate the structure with performance of the function. *Medtronic*, 248 F.3d at 1311 (quoting *Braun Med.*, 124 F.3d at 1424). If, however, this inquiry reveals that no embodiment discloses corresponding structure, the claim is invalid for failure to satisfy the definiteness requirement of § 112, ¶ 2. *Cardiac Pacemakers*, 296 F.3d at 1113-1114; *Budde v. Harley-Davidson, Inc.*, 250 F.3d 1369, 1376 (Fed.Cir.2001) (citing *In re Dossel*, 115 F.3d 942, 945 (Fed.Cir.1997)).

Aristocrat claims that the structure corresponding to the function is the standard microprocessor based gaming machine by means of appropriate programming plus equivalents. This disclosure is not sufficiently specific so that a person would be able to implement the component to perform the recited function. *See, S3 Inc. v. NVIDIA Corp.*, 259 F.3d 1364, 1370-71 (Fed. Cir. 2001); *Medical Instrumentation and Diagnostics Corp. v. Elekta AB*, 344 F.3d 1205, 1211 (2003). The specification does not iden-

tify any structure as the game control means. Similarly, the structure does not provide any guidance to determine the meaning of "standard microprocessor" or "appropriate programming," because there is nothing more that has been provided to clarify or define these terms. Merely stating that a standard microprocessor is the structure without more is not sufficient.

Aristocrat's specification does not create any specific structure or new machine because it does not set forth any specific algorithm for reciting the function. In a means-plus-function claim in which the disclosed structure is a computer or microprocessor programmed to carry out an algorithm, a corresponding structure must be a specific algorithm disclosed in the specification, rather than merely "an algorithm executed by a computer." *See Harris Corp. v. Ericsson, Inc.*, 417 F.3d 1241, 1253 (Fed.Cir.2005). The structure of a microprocessor programmed to carry out an algorithm is limited by the disclosed algorithm. *WMS Gaming*, 184 F.3d at 1348. A specific algorithm is required because a general purpose computer, or microprocessor, programmed to carry out an algorithm creates a new machine and the "general purpose computer in effect becomes a special purpose computer once it is programmed to perform particular functions pursuant to instructions from program software." *Id.* (citations omitted). An algorithm is defined as a "step-by-step process." *See State Street Bank & Trust Co. v. Signature Fin. Group*, 149 F.3d 1368, 1374 (Fed.Cir.1998).

IGT argues that the game control means function of the 102 patent falls under the algorithm require-

ment of *WMS Gaming* and *Harris*. Aristocrat argues that the key inquiry is not concerned with algorithms, but instead is whether a person of skill in the art understands the scope of the means-plus-function when read in light of the patent specification.

WMS Gaming and *Harris* both hold that computer implemented means-plus-function terms are limited to the algorithm disclosed in the specification." *WMS Gaming*, 184 F.3d at 1349; *Harris*, 417 F.3d at 1253. This is due to the fact that "[a] general purpose computer, or microprocessor, programmed to carry out an algorithm creates a new machine, because a general purpose computer in effect becomes a special purpose computer once it is programmed to perform particular functions pursuant to instructions from program software." *WMS Gaming Inc.*, 184 F.3d at 1348. Hence, the structure must include the specific algorithm disclosed in the specification. *Id.*

While Aristocrat argues that the necessary inquiry is whether a person skilled in the art understands the scope of the means-plus-function when read with the patent specification, this is not the proper inquiry. The ability to rely on one skilled in the art does not relieve the patentee of the duty of fully describing the corresponding structure in the patent specification. *See, Default Proof*, 412 F.3d at 1302; *DE Technologies, Inc. v. Dell, Inc.*, 428 F.Supp.2d 512, 517 (W.D. Va 2006). The knowledge of one skilled in the art is not examined "part from and unconnected to the disclosure of the patent." *Medical Instrumentation*, 344 F.3d at 1212. The proper issue is whether one skilled in the art would

understand the specification to disclose the structure. *Id.*; *see also Touchcom, Inc. v. Dresser, Inc.*, 427F.Supp.2d 730 (E.D.Tex 2005) (concluding "t]hat one of skill in the art could create structure sufficient to perform a function is not the inquiry"). The testimony of one of skill in the art cannot be substituted for the "total absence of structure from the specification;" the specification itself must provide the corresponding structure. *See Default Proof*, 412 F.3d at 1302.

Furthermore, *WMS Gaming* and *Harris* deal specifically with computer-implemented means-plus-functions and therefore are more on point than the cases cited by Aristocrat. This Court is therefore compelled to follow the instruction of the Federal Circuit, requiring an algorithm to be disclosed as a corresponding structure in the specification.

Aristocrat's specification does not have any specific algorithm that describes or recites the claimed function. The specification contains no step-by-step process for performing the claimed functions of controlling images on the slot machines video screen, paying a prize when a predetermined combination of symbols comes up or defining the pay lines for games. Because Aristocrat failed to disclose an algorithm or provide sufficient description of the structure, the structure fails to provide assistance to the Court to demonstrate what Aristocrat is claiming as its own. Accordingly, the Court rejects Aristocrat's proposed structure as being indefinite.

The term "game control means" also is indefinite under § 112, ¶ 6 because Aristocrat has failed to link the structure to the means-plus-function limitation.

A structure disclosed in a specification is a corresponding structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim. *Braun*, 124 F.3d at 1425. It is the patentee's burden to clearly link and associate the corresponding structure to the claimed function. *Touchcom Inc. v. Dresser, Inc.*, 427 F.Supp.2d 730, 736 (E.D.Tex.,2005).

Here, the only link argued by Aristocrat to the alleged structure is the methodology, not the functions performed by the game control means. *See*, Neach Declaration and Patent, Col. 2, ll. 66; Col. 3, ll. 1-4. Aristocrat argues that a person of skill in the art would link the claimed functions of the game control means to the disclosed microprocessor and programming identified in the patent specification. Aristocrat cites to the declaration of Dwight Crevelt, a person it claims to be skilled in the art, for the argument that a person of ordinary skill the art would clearly link the disclosed microprocessor with the claimed game control means functions. Opposition (#117) at 8.

This argument does not change the analysis. It is impermissible for a patentee to rely on expert declarations to clearly link the claimed function and structure. *Omega Engineering*, 334 F.3d at 1332; *Koninklijke Philips Electric*, 2005 WL 3500783 at *2. Furthermore, it is not proper to look to the knowledge of one skilled in the art apart from and unconnected to the disclosure of the patent. *Med. Instrumentation*, 344 F.3d at 1212. The testimony of one of ordinary skill in the art cannot supplant the total absence of structure from the specification. *Default Proof*, 412 F.3d at 1300-1302.

There are only two references to game control means in the specifications for the 102 patent. *See*, Col. 5, ll. 65-67. The term "game control means" gives no indication to the reader as to what the term "game control" means and there is nothing within the specifications which clearly links any structure to the function. As a matter of law, the specification fails to link structure to function.

The primary purpose of the definiteness requirement is to ensure that the claims are written in such a way that they give notice to the public of the extent of the legal protection afforded by the patent, so that interested members of the public, such as competitors of the patent owner, can determine whether or not they infringe. *Default Proof*, 412 F.3d at 1302-1303; *All Dental Prodx LLC v. Advantage Dental Prods.*, 309 F.3d 774, 779-80 (Fed.Cir.2002). The 102 patent fails to provide such notice and thus fails to fulfill the requirements of section 112, paragraph 2. Hence, the Court holds that Claim 1 invalid as indefinite.

Because the Court has found that the sole independent claim of the 102 patent, claim 1 to be invalid, all the dependent claims are also invalid. Accordingly, the 102 patent is invalid in its entirety. Furthermore, because the claims are indefinite, the claims, by definition, cannot be construed. *Honeywell Int l*, 341 F.3d at 1338; *Exxon Research*, 265 F.3d at 1375.

III. CONCLUSION

For the foregoing reasons, Defendant's Motion for Summary Judgment (#94) is GRANTED. All other pending motions relating to the claim construction

and patent invalidity, including the Markman Briefs (#63, #66 and #69) and Plaintiff's Request for Oral Argument (#179) are DENIED.

IT IS SO ORDERED.

ARISTOCRAT TECHNOLOGIES AUSTRALIA PTY LIMITED
AND ARISTOCRAT TECHNOLOGIES, INC.,
PLAINTIFFS
V.
INTERNATIONAL GAME TECHNOLOGY AND IGT,
DEFENDANTS

2007-1419

United States District Court
District of Nevada

2:05-cv-00820-BES (LRL)

☐ **Jury Verdict.** This action came before the Court for a trial by jury. The issues have been tried and the jury has rendered its verdict.

☑ **Decision by Court.** This action came to trial or hearing before the Court. The issues have been tried or heard and a decision has been rendered.

IT IS ORDERED AND ADJUDGED

that judgment is entered for the Defendants and against Plaintiffs Aristocrat Technologies Australia Pty Limited, and Aristocrat Technologies, Inc.

4/23/2007
Date

LANCE WILSON
Clerk

/s/ ANDREW MENNEAR
(By) Deputy Clerk

ARISTOCRAT TECHNOLOGIES AUSTRALIA PTY LIMITED AND ARISTOCRAT TECHNOLOGIES, INC., PLAINTIFFS-APPELLANTS,
V.
INTERNATIONAL GAME TECHNOLOGY AND IGT, DEFENDANTS-APPELLEES.

2007-1419

United States Court of Appeals for the Federal Circuit

2008 U.S. App. LEXIS 12719

May 6, 2008, Decided
May 6, 2008, Filed

Before Lourie, Schall, and Bryson, Circuit Judges.

Bryson, Circuit Judge.

A combined petition for panel rehearing and for rehearing en banc having been filed by the Appellants, and the petition for rehearing, having been referred to the panel that heard the appeal, and thereafter the petition for rehearing en banc having been referred to the circuit judges who are in regular active service,

UPON CONSIDERATION THEREOF, it is

ORDERED that the petition for panel rehearing be, and the same hereby is, DENIED and it is further

ORDERED that the petition for rehearing en banc be, and the same hereby is, DENIED.

The mandate of the court will issue on May 13, 2008.

US006093102A

United States Patent [19]

Bennett

[11] Patent Number: 6,093,102

[45] Date of Patent: Jul. 25, 2000

[54] MULTILINE GAMING MACHINE

[75] Inventor: Nicholas Luke Bennett, Manly Vale, Australia

[73] Assignee: Aristocrat Leisure Industries Pty Ltd, Lane Cove Zoff, Australia

[21] Appl. No.: 08/809,453

[22] PCT Filed: Sep. 12, 1995

[86] PCT No.: PCT/AUS/00598

§ 371 Date: Mar. 13, 1997

§ 102(e) Date: Mar. 13, 1997

[87] PCT Pub. No.: WO96/08799

PCT Pub. Date: Mar. 21, 1996

[30] Foreign Application Priority Data

Sep. 15, 1994 [AU] Australia PM8381

[51] Int. Cl.[7] G07F 17/34

[52] U.S. Cl. 463/29; 463/16; 273/138.1

[58] Field of Search ..... 463/16, 20, 21; 273/138.1, 143 R, 143 B, 143

[56] References Cited

U.S. PATENT DOCUMENTS

Re. 34,364 3/1993 Hagiwara 463/20
5,580,053 12/1996 Crouch 463/20

FOREIGN PATENT DOCUMENTS

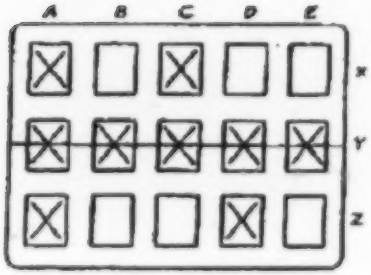
82126 4/1975 Australia .
2119020 5/1983 United Kingdom .
2137393 2/1985 United Kingdom .
2138844 12/1984 United Kingdom .
2187320 2/1987 United Kingdom .
2258334 7/1992 United Kingdom .

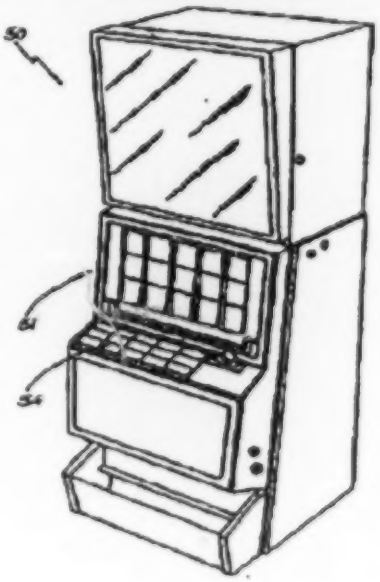
Primary Examiner—Jessica J. Harrison
Assistant Examiner—John M. Hotaling, II
Attorney, Agent, or Firm—Rosenman & Colin LLP

[57] ABSTRACT

A gaming machine has a display which displays a symbols in an array format of x rows and m columns of symbol positions. A game control controls images displayed on the display and is arranged to pay a prize when a predetermined combination of symbols is displayed in a predetermined arrangement of symbol positions including one and only one symbol position in each column of the array. The number of said predetermined arrangements in the gaming machine for any one game is a value which is the product $k_1 \ldots x \ldots k_2 \ldots x \ldots k_m$, where k_x represents a number of symbol positions which have been selected by the player in an x^{th} column of the x rows by m columns of symbol positions on the display (k_1 to k_5 and k_2 to k_5). At least one symbol position is selected from each column, and the number of predetermined arrangements represents the number of possible combinations of the selected symbol positions which have one symbol position in each column of the display means.

12 Claims, 4 Drawing Sheets





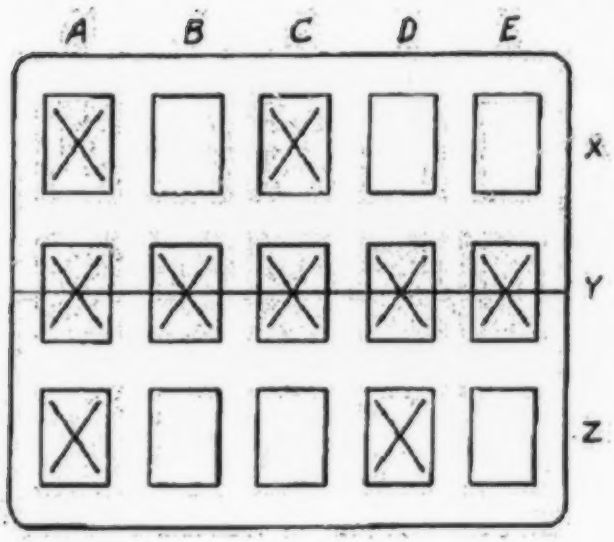


FIG. 1

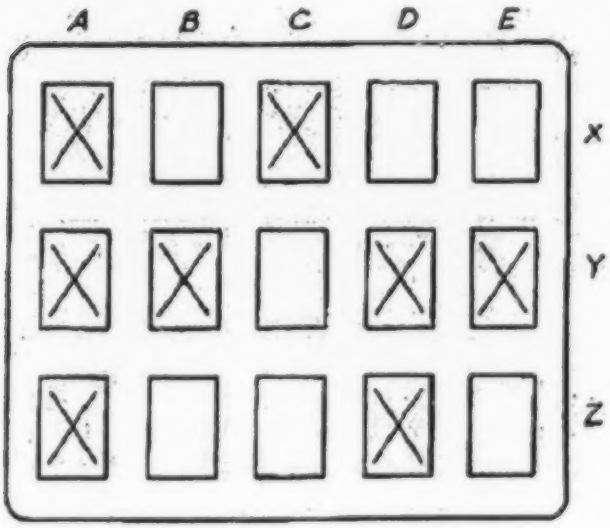


FIG. 2

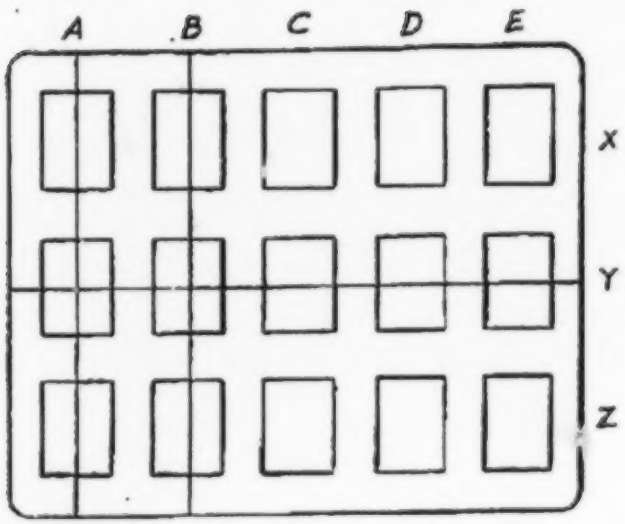


FIG. 3

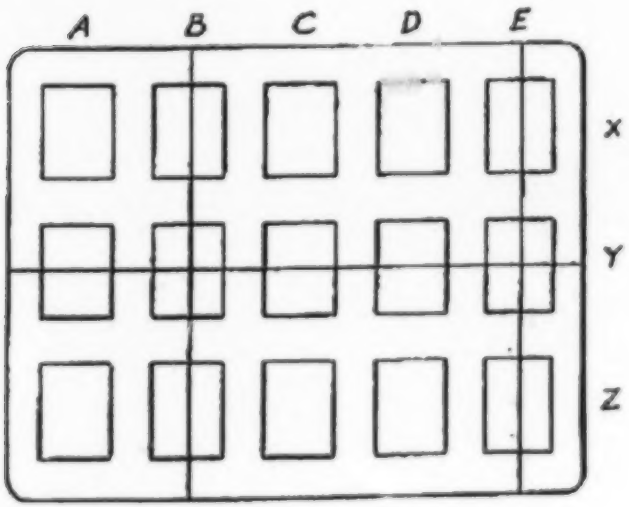


FIG. 4

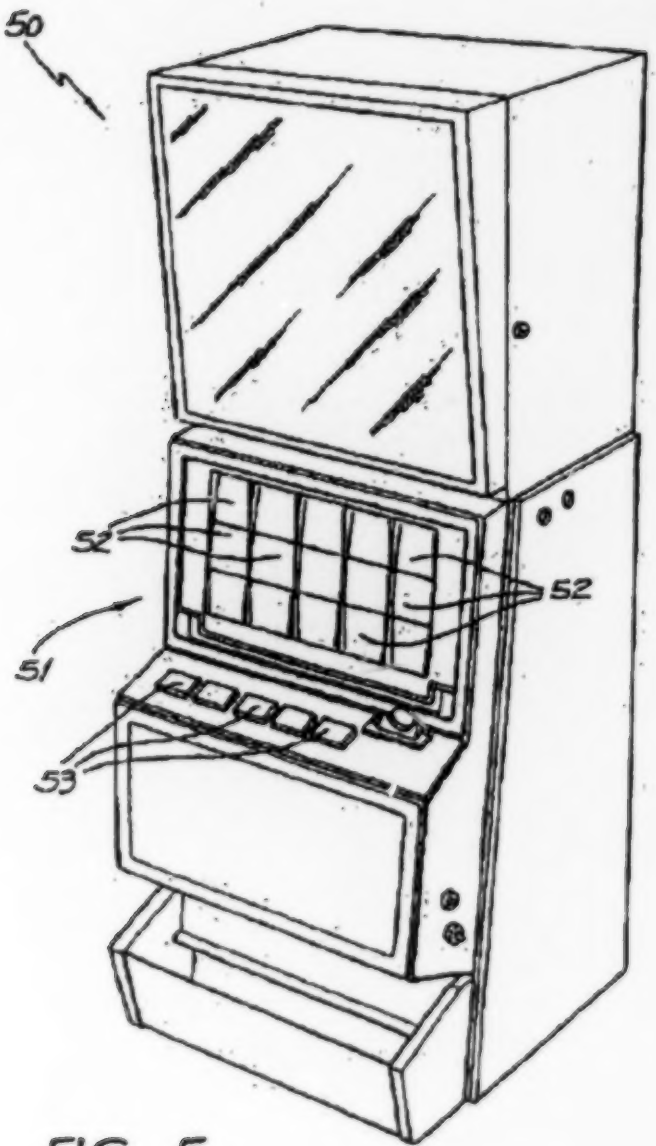


FIG. 5

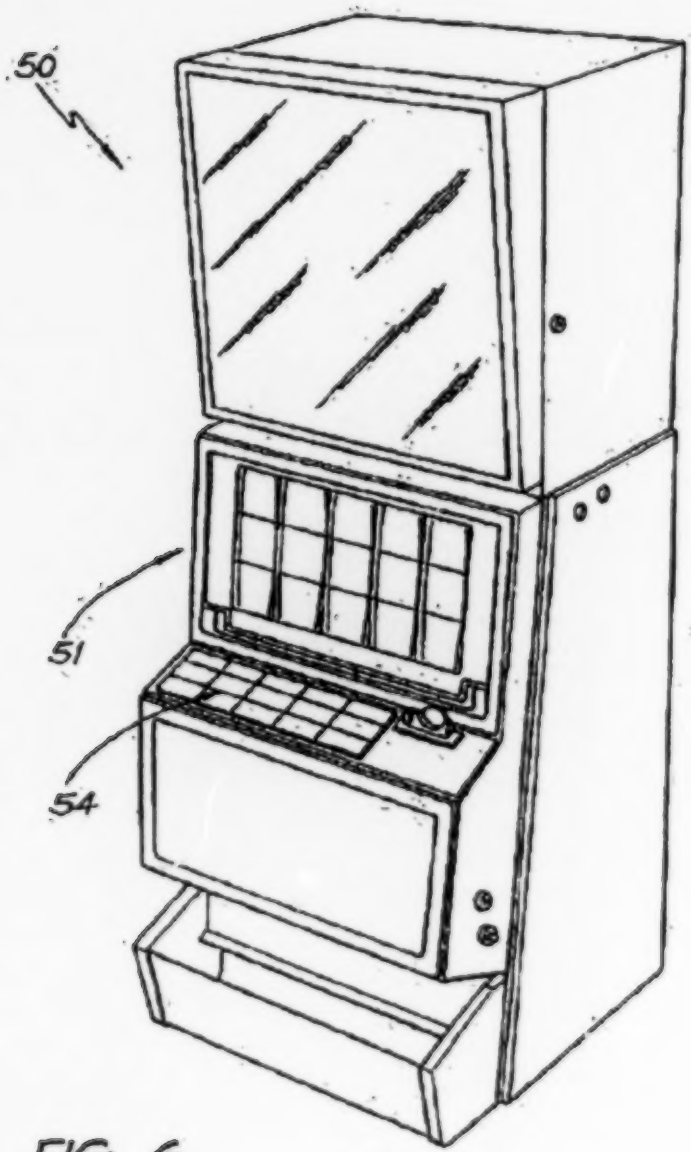


FIG. 6

MULTILINE GAMING MACHINE

IMPROVED MULTILINE GAMING MACHINE

The present invention relates to gaming machines of the type generally referred to as slot machines, fruit machines or poker machines, and in particular the invention provides an improvement to a game played on such a machine.

Players who regularly play gaming machines quickly tire of particular games and therefore it is necessary for manufacturers of these machines to come up with innovative game features that add interest to the games provided on such machines in order to keep the players amused and therefore willing to continue playing the game.

DESCRIPTION OF THE PRIOR ART

Gaming or poker machines have been well known in the state of New South Wales for many years and have more recently gained considerable popularity throughout Australia, with quite substantial amounts of money wagered on these machines. There is a growing tendency for State governments to legalise the use of gaming machines by licensing operators, with resulting revenue gains through licence fees and taxation of monies invested. The licensed operation of gaming machines is the subject of State legislation and regulation. This regulation most always dictates a minimum percentage payout for a gaming machine. For example, a minimum of 85% of monies invested must be returned as winnings, and manufacturers of gaming machines therefore must design their machines around these regulatory controls.

With the growth that has occurred in the gaming machine market there is keen competition between manufacturers to supply the various clubs and new venues. When selecting a supplier of gaming machines, the operator of a venue will often pay close attention to the popularity of various games with their patrons.

Therefore, gaming machine manufacturers are keen to devise games which are popular with players, or mechanisms for improving sales.

Many various strategies have been tried in the past to make games more enticing to players, and these strategies are often aimed at either increasing the maximum prize payable on a machine or creating at least the perception of more winning opportunities. The present invention falls into the latter category. For quite a few years, it has been possible to bet on more than one pay line of a slot machine simultaneously. However this feature has been restricted by the number of pay lines that could be achieved on the display format commonly used in slot machines.

Originally, the term "pay line" included within its scope only straight line arrangements of symbol locations (e.g. horizontal lines, and diagonals in 3x3 machines). In fact original slot machines only paid on the horizontal centreline of symbol locations.

In the more recent past "pay lines" have been devised which are not straight line arrangements of symbol locations although these more recent payline arrangements have still included only symbol locations that were horizontally or diagonally adjacent to one another and always included only one location in each column of the display.

In embodiments of the present invention, paying symbol arrangements are proposed in which symbol locations in adjacent columns of the display are not necessarily horizontally or diagonally adjacent to one another. Throughout this specification these new paying symbol arrangements are still referred to as "pay lines" although in the conventional sense they are not strictly lines at all.

The present invention provides an arrangement whereby the number of pay lines provided on a slot machine, particularly a machine with 3x5 display, can be increased without changing the display format.

SUMMARY OF THE INVENTION

The present invention resides in a gaming machine having display means arranged to display a plurality of symbols in an array of n rows and m columns of symbol positions, game control means arranged to control images displayed on the display means the game control means being arranged to pay a prize when a predetermined combination of symbols is displayed in a predetermined arrangement of symbol positions including one and only one symbol position in each column of the array, the gaming machine being characterised in that the number of said predetermined arrangements for any one game is a value which is the product $k_1 \times k_2 \ldots k_j$, where k_j represents a number of symbol positions which have been selected by the player in an i^{th} column of the display ($0<i\leq m$), at least one symbol position being selected from each column, and the number of predetermined arrangements being the number of possible combinations of the selected symbol positions which have one symbol position in each column of the display means.

The preferred embodiments of the invention use a display means which displays symbols in 3 rows and 3, 4 or 5 columns.

In a particular embodiment the number of predetermined symbol arrangements for any one game is a value of where j is less than or equal to m, is directly or indirectly player selectable and represents a selected number of columns of the display means whereby each predetermined arrangement is made up of an symbol positions one selected from each of the m columns, the predetermined arrangement used for a given value of j being all possible combinations using one symbol position from each of j selected columns of the display means combined with the symbol positions in a predetermined row from the remaining m-j columns.

In this embodiment, rather than individually selecting symbol positions, a player will select columns of symbol positions as a group. This arrangement has the advantage that the selection mechanism is simplified.

Preferably the display format will have three rows and the predetermined row from which the remaining m-j symbol positions are selected is a centre row.

Preferably then the j columns will be a left most j columns of the display means.

The invention is equally applicable to video machines and machines employing spinning reels.

BRIEF DESCRIPTION OF THE DRAWINGS

Embodiments of the present invention will now be described by way of example with reference to the accompanying drawings in which:

FIGS. 1,2,3 and 4 diagrammatically illustrate four possible embodiments of a 243 line multi-line pay arrangement for a machine with a 3x5 display format; and

FIGS. 5 and 6 illustrate two possible machine configurations in which the games described with reference to FIGS 1 to 4 may be employed.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

In the following detailed description, the methodology of the embodiments will be described and it is to be understood

that it is within the capabilities of the non-inventive worker in the art to introduce the methodology on any standard microprocessor base gaming machine by means of appropriate programming.

Traditional slot machines have made use of spinning reels to provide a display function with symbols carried on the reels being aligned to produce a game result which may or may not be a winning combination. Traditionally such machines paid a prize only on a centre row combination, however over the years more complex pay arrangements have been developed in which winning combinations could appear on horizontal lines above and below the centre row line, and later on diagonal lines (typically on 3 reel machines)

In more recent times video displays have been used to simulate spinning reels on these types of machines and in some instances machines have been provided with matrices of pseudo spinning wheels such as a 3x3 matrix of reels, whereby every single position on the display screen is essentially independently randomly selected and therefore it was valid to pay on vertical combinations as well as horizontal combinations. In such a machine with a 3x3 symbol matrix display, winning combinations could be achieved on any one of three horizontal pay lines, three vertical paylines and two diagonals, making 8 possible lines on which a result could be enacted.

It is normal for machines of the type having multiple pay lines available, that the player would purchase the option of playing for a win on lines other than the centre line. That is to say, if the player wagered only one token he played only for a winning combination on one line, whereas if he wagered a number of tokens he may well select to wager Some of these tokens on lines other than the centre line of the display.

This mechanism adds interest to the game being played by the player in essentially it enables him to make multiple bets simultaneously.

Referring to FIG. 1, a matrix symbolic of a typical three line by five column display matrix is illustrated, and it will be immediately apparent that in such an arrangement diagonal pay lines, as conventionally used in 3x3 symbol matrix machines are not appropriate to the 3x5 format. Similarly, in slot machines which play games which follow the traditional format of a plurality of vertical spinning reels, vertical pay lines are not appropriate as there is no significant degree of randomness in the combinations provided on the vertical line.

Therefore, with this in mind the first embodiment of the present invention provides an arrangement for a slot machine having a 3x5 symbol matrix display with 243 possible pay lines being all possible combinations of symbol positions which include one position in each column of the display.

Referring to FIG. 1 a 3x5 display matrix is illustrated and in this embodiment a player may select the symbol positions to be included in their pay line combinations. If the symbol positions marked with 'x' in FIG. 1 are selected by the player (ie AX, AY, AZ, BY, CX, CY, DY, DZ, EY) then the corresponding pay lines will be as shown in Table 1.

TABLE 1

LINE NO	DISPLAY POSITIONS USED				
1	AX	BY	CX	DY	EY
2	AX	BY	CX	DZ	EY
3	AX	BY	CY	DY	EY
4	AX	BY	CY	DZ	EY

TABLE 1-continued

LINE NO	DISPLAY POSITIONS USED				
5	AY	BY	CX	DY	EY
6	AY	BY	CX	DZ	EY
7	AY	BY	CY	DY	EY
8	AY	BY	CY	DZ	EY
9	AZ	BY	CX	DY	EY
10	AZ	BY	CX	DZ	EY
11	AZ	BY	CY	DY	EY
12	AZ	BY	CY	DZ	EY

It will be seen that the number of lines produced is given by the product

$$\prod_{i=1}^{5} k_i$$

where k_i is the number of symbol positions selected in the i^{th} column of the machine. For an n column display the number of lines would be represented by the product

$$k_1 k_2 \ldots k_{n-1} k_n$$

In the embodiment of FIG. 1 the centre line symbol positions are always selected, however it is also possible to produce embodiments in which any single symbol position might be selected in each column and such an embodiment is illustrated in FIG. 2. In this embodiment lines 1,2,5,8,9 and 10 defined in Table 1 will be effective for the symbol positions selected (as marked with a 'X'). In the embodiment of FIG. 2 the selection would default to the centre line position in the event that no symbol was selected in a particular column.

Selection of symbol positions for inclusion on pay lines may be achieved using a number of methods such as placing a touch sensitive layer over each symbol position in the display, or providing a matrix of buttons corresponding to the display matrix format.

FIGS. 3 and 4 illustrate a simplified version of the invention in which players may select columns of symbol positions to be included in their pay line combinations. These embodiments are simpler than those previously described because only one selection mechanism is required per display column. Selection might be by way of touch sensitive membrane over the display or by way of a switch under each column.

In the embodiment of FIG. 3 columns must be selected from the left such that if 3 lines are required column A is selected, if 9 lines are required column B is selected (and column A will be automatically selected), and similarly for 27 lines (column C), 81 lines (column D) and 243 lines (column E). The lines provided when 9 lines are selected are defined in Table 2.

TABLE 2

LINE NO	DISPLAY POSITIONS USED				
1	AX	BX	CY	DY	EY
2	AX	BY	CY	DY	EY
3	AX	BZ	CY	DY	EY
4	AY	BX	CY	DY	EY
5	AY	BY	CY	DY	EY
6	AY	BZ	CY	DY	EY
7	AZ	BX	CY	DY	EY
8	AZ	BY	CY	DY	EY
9	AZ	BZ	CY	DY	EY

In the embodiment of FIG. 4 there is no restriction on which columns are selected and therefore the player must

indicate each column to be included. The lines selected in FIG. 4 are defined in Table 3.

TABLE 3

LINE NO	DISPLAY POSITIONS USED				
1	AY	BX	CZ	DY	EX
2	AY	BX	CY	DY	EY
3	AY	BX	CY	DY	EZ
4	AY	BY	CY	DY	EZ
5	AY	BY	CY	DY	EY
6	AY	BY	CY	DY	EX
7	AY	BZ	CY	DY	EX
8	AY	BZ	CY	DY	EY
9	AY	BZ	CY	DY	EZ

It will be seen that the number of lines produced in the embodiments of FIGS. 3 and 4 is given by

$$n^j$$

where n is the number of display rows and j is the number of columns selected (0≤j≤m)

Referring to FIG. 5, a slot machine 50 is illustrated in which symbol positions are selected for inclusion in pay lines by way of a touch sensitive membrane applied over the display screen 51, the membrane being divided into a number of switch panels 52 each of which corresponds with one display position of the display 51. This arrangement can be used to implement the embodiments described with reference to FIGS. 1 and 2.

Each vertical set of touch sensitive panels 52 can be operated in parallel in the embodiments of FIGS. 3 and 4, such that columns of display positions can be selected by touching any switch over the respective column. Alternatively, each set of three vertically aligned switches may be implemented as a single touch panel running over the entire column of display positions.

When implementing the embodiments described with reference to FIGS. 3 and 4, it is also possible to dispense with the touch switches and use the switches 53 located below the display area.

The machine of FIG. 5 is illustrated with a video display but may also make use of a display comprising a plurality of stepping motor driven reels carrying a plurality of symbols.

Turning now to FIG. 6, a further slot machine configuration is shown in which the slot machine 50 is provided with a display 51, which may be either a video display or a stepper motor driven reel display and a matrix of switches 54 corresponding to the format of the display matrix, such that symbol positions can be selected by use of the matrix 54 to define the pay lines applicable for a game played on the machine. This arrangement can be used for the embodiments described with reference to FIGS. 1 and 2.

It will be recognised that other switch configurations may also be employed which multiplex switch functions to reduce the number of switches required.

It will also be appreciated by persons skilled in the art that numerous variations and/or modifications may be made to the invention as shown in the specific embodiments without departing from the spirit or scope of the invention as broadly described. The present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive.

What is claimed is:

1. A gaming machine having display means arranged to display a plurality of symbols in a display format having an array of n rows and m columns of symbol positions, game control means arranged to control images displayed on the display means, the game control means being arranged to pay a prize when a predetermined combination of symbols is displayed in a predetermined arrangement of symbol positions selected by a player, playing a game, including one and only one symbol position in each column of the array, the gaming machine being characterized in that selection means are provided to enable the player to control a definition of one or more predetermined arrangements by selecting one or more of the symbol positions and the control means defining a set of predetermined arrangements for a current game comprising each possible combination of the symbol positions selected by the player which have one and only one symbol position in each column of the display means, wherein the number of said predetermined arrangements for any one game is a value which is the product $k_1 \ldots k_i \ldots k_j \ldots k_m$, where k_i is a number of symbol positions which have been selected by the player in an i^{th} column of the n rows by m columns of symbol positions on the display ($0 \le j \le m$ and $k_i \le n$).

2. The gaming machine as claimed in claim 1 wherein the selection means provides means for columns of each column of symbols as a group and the number of predetermined arrangements for any one game is a value of where j is less than or equal to the number of m columns of symbol position and is a number of columns selected for that game, the selected columns being directly or indirectly selectable by the player whereby each predetermined arrangement is made up of one symbol position selected from each of the n columns to give a total number of selected symbol positions p in each predetermined arrangement, where p=n, the predetermined arrangements used for a given value of j being all possible combinations using one symbol position from each of the j selected columns of the display means combined with the symbol positions in a predetermined row from the remaining m−j columns.

3. The gaming machine of claim 2, wherein the display format has three rows and the predetermined row from which the symbol positions are selected in the remaining m−j columns of symbol positions is a centre row.

4. The gaming machine of claim 2 wherein the j columns are the left most j columns of the display means.

5. The gaming machine of claim 3 wherein the display means is arranged to display symbols in 3 rows and 3 columns.

6. The gaming machine of claim 3 wherein the display means is arranged to display symbols in 3 rows and 4 columns.

7. The gaming machine of claim 3 wherein the display means is arranged to display symbols in 3 rows and 5 columns.

8. The gaming machine as claimed in claim 1 wherein the player is able to select any number of symbol positions in any column of the display with a predetermined position being selected by the machine in any column in which the player does not make a selection, and where the predetermined arrangements used in a given game are all possible combinations of the selected symbol position having one and only one position in each column of the display.

9. The gaming machine of claim 8 wherein the predetermined positions selected by the machine are in the centre row of the display.

10. The gaming machine of claim 9 wherein the display means is arranged to display symbols in 3 rows and 3 columns.

11. The gaming machine of claim 9 wherein the display means is arranged to display symbols in 3 rows and 4 columns.

12. The gaming machine of claim 9 wherein the display means is arranged to display symbols in 3 rows and 5 columns.

* * * * *

NOTE: This disposition is nonprecedential.

United States Court of Appeals for the Federal Circuit

2007-1375

ARISTOCRAT TECHNOLOGIES AUSTRALIA PTY LTD.,

Plaintiff-Appellant,

v.

MULTIMEDIA GAMES, INC.

Defendant-Appellee.

Glenn K. Beaton, Gibson, Dunn & Crutcher LLP, of Denver, Colorado, argued for plaintiff-appellant. With him on the brief were J. Gregory Whitehair and Stephen C. McKenna.

Charles A. Bird, Luce, Forward, Hamilton & Scripps LLP, of San Diego, California, argued for defendant-appellee. With him on the brief was Callie A. Bjurstrom.

Appealed from: United States District Court
for the Central District of California.

Judge George P. Schiavelli

NOTE: This disposition is nonprecedential.

United States Court of Appeals for the Federal Circuit

2007-1375

ARISTOCRAT TECHNOLOGIES AUSTRALIA PTY LTD.,

Plaintiff-Appellant,

v.

MULTIMEDIA GAMES, INC.

Defendant-Appellee.

Appeal from the United States District Court for the Central District of California in Case No. 05-CV-0679, Judge George P. Schiavelli.

DECIDED: February 22, 2008

Before LOURIE, SCHALL, and BRYSON, Circuit Judges.

LOURIE, Circuit Judge.

Aristocrat Technologies Australia Pty Ltd. ("Aristocrat") appeals from the order of the United States District Court for the Central District of California entering summary judgment of invalidity for indefiniteness of U.S. Patent 4,817,951 ("the '951 patent") in favor of Multimedia Games, Inc. ("Multimedia"). Because the district court erred in construing the claims at summary judgment while genuine issues of material fact remained pertinent to such construction, we reverse the district court's order and remand for further proceedings in accordance with this opinion.

BACKGROUND

On January 27, 2005, Aristocrat sued Multimedia for infringement of the '951 patent. The '951 patent is entitled "Player Operable Lottery Machine Having Display Means Displaying Combinations of Game Result Indicia," and describes and claims a machine similar to a slot machine that provides a paperless version of an instant lottery. At the start of a new lottery series, the controller retrieves a table of all the possible results for that series and then assigns each result to a random location in a block of memory, thereby creating a randomly ordered list of the game results. Each time a player deposits the required coins and pulls the lever to purchase a pseudo-ticket for the lottery, the next result in order on the list is retrieved, a display corresponding to the result is generated on the

reels or other display, and, if a payout has been assigned for that result, the controller dispenses the coins corresponding to the assigned payout to the player or credits the amount toward further play. This process is repeated until the end of the list is reached (i.e., all tickets for that series have been purchased). The process is then repeated for another lottery series that may optionally be based upon a different table of possible results.

Claim 1, the only independent claim of the '951 patent, reads as follows:

> A player operable instant lottery machine, comprising display means, control means to control the operation of the display means, and initiation means operable by a player to cause the control means to select and display a new result on the display means,
>
> said display means comprising means to simultaneously display several indicia in combination, said indicia being selected from a predetermined set of indicia and said combination being selected from a predetermined set of combinations of said indicia,
>
> the control means including storage means for storing an ordered set of numbered game results representing a set of pseudo tickets of a lottery game series which is cur-

> rently in progress, random number selection means for generating game results for said ordered set of game results and means for storing the ordered set in the storage means at the commencement of each said game series, means for sequentially selecting a next game result from the ordered set in the order in which they are stored in response to operation of the initiating means and means for displaying a combination of indicia corresponding to the currently selected game result.

(Emphases added.)

Multimedia filed a motion for summary judgment arguing that claim 1 was invalid for indefiniteness because the specification of the patent failed to disclose necessary structure corresponding to several of the means-plus-function limitations. The district court agreed with Multimedia and concluded that the claims were invalid as indefinite. The court identified six claim limitations that lacked corresponding structure in the specification: "control means"; "storage means"; "random number selection means"; "means for storing"; "means for sequentially selecting"; and "means for displaying." The court concluded that because a person of ordinary skill in the art could not identify structure corresponding to the functions to be performed by the recited means, such a person could not determine the meaning of the claims.

Aristocrat timely appealed. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(1).

DISCUSSION

Aristocrat argues that the first disputed claim limitation, "control means," is not a means-plus-function limitation because the elements that make up the "control means" in claim 1 are sufficient to define its structure without resort to the specification. On the other hand, Aristocrat argues that even if "control means" is a means-plus-function limitation, it clearly corresponds to the "controller" described in the specification—a term that persons of ordinary skill in the art would understand to be a microprocessor or other similar computerized control device based both on the term itself and the way that the controller is described in the specification. Aristocrat asserts that the "storage means" is clearly associated with the "memory" described in the specification and that the term "memory" identifies sufficient structure for the means, particularly because the specification shows the memory to be a part of the "controller" that has already been identified as a microprocessor. Aristocrat also argues that the specification describes the "random number selection means" as a "pseudo-random number generating algorithm." Similarly, Aristocrat states that "means for storing," "means for sequentially selecting," and "means for displaying" are simply portions of the programming for the microprocessor controller that perform the associated functions.

Multimedia responds that subsidiary limitations that are themselves means-plus-function limitations cannot constitute sufficient structure to rebut the presumption that "control means" is a means-plus-function limitation. Multimedia also argues that nowhere in the specification is the "controller" identified as a microprocessor and that the term "memory" is too general to identify structure to a person of ordinary skill in the art. Multimedia adds that it is necessary for the specification to disclose at least a single algorithm for implementing the "pseudo-random number generating algorithm" in order to avoid indefiniteness. As for the final three means-plus-function limitations, Multimedia asserts simply that there is no structure in the specification associated with the stated functions.

We review claim construction de novo on appeal. Cybor Corp. v. FAS Tech., Inc., 138 F.3d 1448, 1456 (Fed. Cir. 1998) (en banc). "We likewise review the district court's grant of summary judgment de novo, reapplying the standards applied by the district court." U.S. Philips Corp. v. Iwasaki Elec. Co. Ltd., 505 F.3d 1371, 1374 (Fed. Cir. 2007). "Claim construction of a means-plus-function limitation includes two steps. First, the court must determine the claimed function. Second, the court must identify the corresponding structure in the written description of the patent that performs that function." Applied Med. Res. Corp. v. U.S. Surgical Corp., 448 F.3d 1324, 1333 (Fed. Cir. 2006) (citations omitted). "The review of indefiniteness under 35 U.S.C. § 112, paragraph 2, pro-

ceeds as a question of law without deference." SmithKline Beecham Corp. v. Apotex Corp., 403 F.3d 1331, 1338 (Fed. Cir. 2005).

We conclude that genuine issues of material fact exist concerning whether one skilled in the art of computer programming would identify structure in the specification associated with the various asserted claim limitations, thereby precluding summary judgment, and we thus reverse the district court's summary judgment order. While we leave the district court to construe the disputed claim terms upon remand after the opportunity to hear any relevant testimony or evidence, we provide the following guidance to aid the court in its deliberations.

First, we agree with the district court that the "control means" limitation should be construed as a means-plus-function limitation. A presumption applies that a claim limitation that includes the word "means" is intended to invoke means-plus-function treatment. Rodime PLC v. Seagate Tech., Inc., 174 F.3d 1294, 1302 (Fed. Cir. 1999). However, that presumption may be rebutted (1) if the claim limitation recites no function corresponding to the means or (2) if the claim limitation itself recites sufficient structure for performing the recited function. Id.; see also York Products, Inc. v. Cent. Tractor Farm & Family Ctr., 99 F.3d 1568, 1576 (Fed. Cir. 1996) ("Without a means' sufficiently connected to a recited function, the presumption in use of the word means' does not operate."); Cole v. Kimberly-Clark Corp., 102 F.3d 524, 531 (Fed. Cir. 1996) (concluding that "perforation means . . . for tear-

ing" was not a means-plus-function limitation because perforations were the structure for accomplishing the tearing function). While Aristocrat does not argue here that the claim recites no function corresponding to the control means, neither does Aristocrat argue that the clause "control means" alone recites sufficient structure to rebut the presumption. It does argue that the five subsidiary means-plus-function limitations do recite sufficient structure to rebut the presumption that "control means" is a means-plus-function limitation. We disagree.

The means-plus-function limitations subsidiary to the "control means" do not recite sufficient structure to remove the "control means" limitation from the ambit of 35 U.S.C. § 112, ¶ 6. While we do not agree with the apparent argument by Multimedia that subsidiary means-plus-function limitations can never define sufficient structure to rebut the presumption concerning means-plus-function treatment of a parent clause on the ground that they only recite additional functions, nonetheless, even if we were to assume that structures argued by Aristocrat for each of the subsidiary limitations (memory for the "storage means" and programming or software for the other limitations) are described in the specification, the structure of the "control means" would still not be sufficiently defined. That is because a combination of memory and programming does not adequately describe a microprocessor or other structure for performing the claimed functions of the "control means"—controlling the operation of the display means, responding to the initiation means, selecting and

displaying a new result, etc. The structure of a parent means clause must be disclosed in terms of the functions that the claim states the means performs. Here, it is not clear that the structures allegedly associated with the subsidiary means as a whole are capable of performing all of the functions associated with the parent means. However, under different circumstances it may be possible that once identified, structures corresponding to the subsidiary means-plus-function limitations may as a whole sufficiently recite the structure for performing the superior function such that resort to the specification for further corresponding structure is not necessary. Because that is not the case here, we conclude that the presumption of means-plus-function treatment applies, and "control means" should be construed as a means-plus-function limitation subject to having structural support in the specification.

Having concluded that "control means" is an independent means-plus-function limitation that must stand on its own merits, we must still determine whether it is supported by sufficient structure in the specification before turning further to evaluate the subsidiary limitations on their own. Aristocrat argues that the function of the control means is performed by the "controller" in the specification and that a person of ordinary skill in the art would readily identify a "controller" in the context of this patent as a microprocessor. We do not know if that is the case, and the district court did not decide that question. But what is clear is that the specification must disclose some structure for a means-plus-function limitation. See Default Proof Credit Card Sys., Inc. v. Home Depot U.S.A., Inc.,

412 F.3d 1291, 1302 (Fed. Cir. 2005) ("In sum, while it is true that the patentee need not disclose details of structures well known in the art, the specification must nonetheless disclose some structure. Stated differently, the testimony of one of ordinary skill in the art cannot supplant the total absence of structure from the specification.") (citation omitted); In re Donaldson Co., Inc., 16 F.3d 1189, 1195 (Fed. Cir. 1994) (en banc) ("[I]f one employs means-plus-function language in a claim, one must set forth in the specification an adequate disclosure showing what is meant by that language."). Whether a specification discloses adequate structure corresponding to a means-plus-function limitation is determined from the viewpoint of one of ordinary skill in the art: "[I]t is well-established that the determination whether a claim is invalid as indefinite depends on whether those skilled in the art would understand the scope of the claim when the claim is read in light of the specification.'" Atmel Corp. v. Info. Storage Devices, Inc., 198 F.3d 1374, 1378 (Fed. Cir. 1999) (quoting N. Am. Vaccine, Inc. v. Am. Cyanamid Co., 7 F.3d 1571, 1579, (Fed. Cir. 1993)). That is what needs to be established by evidence on remand.

The law does not require that structure be explicitly identified as long as a person of ordinary skill in the art would understand what structure is identified in the specification. See Atmel Corp. v. Info. Storage Devices, Inc., 198 F.3d 1374, 1380 (Fed. Cir. 1999) (quoting with approval a proposed Supplemental Examiner Guideline stating that the "written description does not have to explicitly describe the structure . . . corresponding to a

means(or step-) plus-function limitation to particularly point out and distinctly claim the invention as required by 35 U.S.C. 112 ¶ 2"). We have held that a computer was the intended structure even when it was not expressly recited. For example, in In re Dossel, 115 F.3d 942, 946-47 (Fed. Cir. 1997), we concluded that although the specification did not use the "magic word computer,'" a general or special purpose computer was clearly the structure intended to "receive[] digital data, perform[] complex mathematical computations and output[] the results to a display." See also, Creo Products, Inc. v. Presstek, Inc., 305 F.3d 1337, 1347 (Fed. Cir. 2002) ("Under our case law interpreting § 112, ¶ 6, knowledge of one skilled in the art can be called upon to flesh out a particular structural reference in the specification for the purpose of satisfying the statutory requirement of definiteness."). However, because it is not clear from the record that the present case is a Dossel situation, where the specification showed that a computer was clearly intended to be the means performing the claimed function, we will leave that determination to the district court upon remand.

Thus, the district court will need to define the relevant art and the level of ordinary skill in that art. Then, it will be presented upon remand with two questions in construing the limitation "control means." First, would a person of ordinary skill in the art understand the word "controller" alone in the context of this invention to refer to a particular structure, such as a microprocessor; if the answer is "yes," further inquiry into additional details of the specification is unnecessary because

there would be adequate structure in the specification. Second, if the answer to the first question is "no," one must ask whether a person of ordinary skill in the art would understand the word "controller" in the context of other statements and description in the specification to identify a particular structure, in which case, again, there would be adequate structure and the claim would not be indefinite. The district court might consider whether the controller must include writable memory that is capable of storing the randomly ordered set of game results and be capable of using a pseudo-random number generating algorithm. In considering these questions, the court should consider how the reference to the use of "pointers" in the procedure of Figure 5 impacts the way in which a person of ordinary skill in the art would understand the term controller in the context of this specification. The expert testimony cited by the parties thus far, however, was too generalized and insufficiently focused on such specific questions in order to be relied upon for summary judgment.

The district court will also need to evaluate the subsidiary means clauses in the same manner. However, if the district court concludes that the structure of the "control means" is adequately identified in the specification, the identified structure will aid in the construction of the remaining claim terms because the organization of claim 1 requires that the structure of each of the subsidiary means-plus-function limitations must be a subset or part of the structure corresponding to the "control means." Thus, higher level structure leads to subsidiary structure. For example, if the district court con-

cludes that the "control means" corresponds to a microprocessor as urged by Aristocrat, construction of the "storage means" will be a straightforward matter as the parties already agree that the "storage means" refers to the "memory" in the specification and computer or microprocessor memory is a generally known structure.

However, Multimedia argues that even if the "random number selection means" corresponds to a "pseudo-random number generating algorithm," that limitation is still indefinite because the specifics of that algorithm are not disclosed in the specification. Multimedia seemingly urges that WMS Gaming, Inc. v. International Game Technology, 184 F.3d 1339 (Fed. Cir. 1999), stands for the rule that when a general purpose microprocessor or computer is the structure corresponding to a recited function, a specific algorithm for performing that function must be disclosed in order to avoid indefiniteness, and, by extension, a specific random number algorithm must be disclosed here. WMS Gaming, however, does not require that a particular algorithm be identified if the selection of the algorithm or group of algorithms needed to perform the function in question would be readily apparent to a person of skill in the art. For example, in Dossel, we found that the claim limitations "means for reconstructing the current distributions of the volume elements which are situated on said surfaces on the basis of said measured values" and "reconstruction means for determining the current distributions at said predetermined volume locations from said stored values" were not indefinite because, "[w]hile the written description d[id] not disclose exactly what

mathematical algorithm w[ould] be used to compute the end result, it d[id] state that known algorithms' c[ould] be used to solve standard equations which are known in the art." 115 F.3d at 946.

Similarly, in Medical Instrumentation, although we concluded that a box labeled "Image Format Conversion" in one of the patent figures could not "serve to clearly link software as a corresponding structure for the function of converting the images into a selected format," we also concluded that "there would be no need for a disclosure of the specific program code if software were linked to the converting function and one skilled in the art would know the kind of program to use." 344 F.3d at 1213-14. Thus, if the district court concludes on remand that a controller is synonymous with a microprocessor and that a person of skill in the art would readily appreciate the type of algorithm necessary to perform the pseudo-random number generating function, the primary focus for purposes of construing "random number selection means" and the final three claim terms in dispute, "means for storing," "means for sequentially selecting," and "means for displaying," will be whether algorithms needed to perform those functions are readily apparent to a person of skill in the art or are disclosed in the specification.

CONCLUSION

For the foregoing reasons, we reverse the district court's entry of summary judgment of

invalidity of the '951 patent and remand for further proceedings in accordance with this opinion.

REVERSED AND REMANDED